

# PATENT COOPERATION TREATY

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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

(Rationalised Report according to the Notice of the President of the EPO published in the OJ11/2001)

Applicant's or agent's file reference <b>1686D/MG</b>	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. <b>PCT/IT2004/000192</b>	International filing date ( <i>day/month/year</i> ) <b>08/04/2004</b>	Priority date ( <i>day/month/year</i> ) <b>17/04/2003</b>
International Patent Classification (IPC) or national classification and IPC <b>B41J2/175</b>		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consists of a total of 3 sheets.

**3. This report contains indications relating to the following items:**

## I Basis of the report

II  Priority

**III**  Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

#### **IV** Lack of unity of invention

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

**VI**  Certain documents cited

## VII Certain defects in the international application

## VIII Certain observations on the international application

Date of submission of the demand  15/11/2004	Date of completion of this report  18-04-2005
Name and mailing address of the IPEA/  European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Netherlands Tel.: (+31-70) 340-2040 Fax: (+31-70) 340-3016	Authorized officer  Adam, E  Telephone No. +31 70 340-3100

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/IT2004/000192

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
    - international search (under Rules 12.3 and 23.1(b))
    - publication of the international application (under Rule 12.4)
    - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

1-10 as originally filed

**Claims, Numbers**

1-9 received on 16.02.2005 with letter of 16.02.2005

**Drawings, Sheets**

1/4-4/4 as originally filed

- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3.  The amendments have resulted in the cancellation of:

- the description, pages
- the claims, Nos.
- the drawings, sheets/figs
- the sequence listing (*specify*):
- any table(s) related to sequence listing (*specify*):

4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- the description, pages
- the claims, Nos.
- the drawings, sheets/figs
- the sequence listing (*specify*):
- any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	1-9
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-9
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-9
	No:	Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

**INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

International application No.

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**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. US605183-A (D1) discloses a station for storing and refilling with ink a cartridge (32) of a printhead, comprising a container (10) with a collection chamber (20) containing a predetermined quantity of ink for refilling completely said cartridge a plurality of times, said collection chamber (20) being arranged adjacently to a bottom wall (14) of said container (10), said bottom wall (14) serving as a support platform of said container on a horizontal plane so as to define a vertical operating position of said station, said container (10) having an external shape defining at least one side wall (12) of said container and also being provided with a housing, attached to a top wall (30) of said container (10) and suitable for accommodating said cartridge (32), said station further comprising refilling means (26) at least partially immersed in said predetermined quantity of ink, when said station is arranged in said vertical operating position, and suitable for cooperating with said cartridge for transferring said ink from said collection chamber to said cartridge.

Document D1 differs from the subject-matter of claim 1 in that a back-flow compartment is provided, surrounding said housing and communicating freely with said collection chamber for receiving the ink contained in said collection chamber when said station is turned on from said vertical operating position, said back-flow compartment and said collection chamber (18 ) having their respective volumes proportionate in such a way that, when said station is tilted from said vertical operating position and placed, along any side wall of said container, in a tilted position on said horizontal plane, when said station is turned upside down with respect to said vertical operating position, said predetermined quantity of ink flows back from said collection chamber to said back-flow compartment, whereby said refilling means emerge from said ink and any leakage of ink through said refilling means is avoided.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention a container which can avoid the

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(SEPARATE SHEET)**

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drawback that when the container is turned over on a side or turned down, during transport for instance, the capillary element remains in contact with the ink and continues transferring the ink to the cartridge not only through capillarity but also on account of the head of ink above the capillary element, therefore causing an overfilling of the cartridge with, as a result, ink flowing out of the cartridge.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) because such a construction is unknown in the prior art, the objective problem is also not assessed in the prior art. Moreover, there is no hint for the person skilled in the art so as to come to the claimed solution, namely providing such a back-flow compartment.

Claims 1 to 9 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

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## NEW CLAIMS

1. Station (1) for storing and refilling with ink a cartridge (2) of a printhead, comprising:

a container (4) with a collection chamber (18) containing a predetermined quantity (H) of ink (17) for refilling completely said cartridge (2) a plurality of times, said collection chamber (18) being arranged adjacently to a bottom wall (6) of said container (4), said bottom wall (6) serving as a support platform (6a) of said container (4) on a horizontal plane (9) so as to define a vertical operating position (P1) of said station (1), said container (4) having an external shape defining at least one side wall (8, 8a, 8b, 8c, 8d) of said container (4) and also being provided with a housing (10), attached to a top wall (7) of said container (4) and suitable for accommodating said cartridge (2),

said station (1) further comprising refilling means (24, 26) at least partially immersed in said predetermined quantity of ink (17), when said station (1) is arranged in said vertical operating position (P1), and suitable for cooperating with said cartridge (2) for transferring said ink from said collection chamber (18) to said cartridge (2).

characterized in that a back-flow compartment (45) is provided, surrounding said housing (10) and communicating freely with said collection chamber (18) for receiving the ink contained in said collection chamber (18) when said station (1) is turned on from said vertical operating position (P1),

said back-flow compartment (45) and said collection chamber (18) having their respective volumes proportionate in such a way that, when said station (1) is

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tilted from said vertical operating position (P1) and placed, along any side wall (8, 8a, 8b, 8c, 8d) of said container (4), in a tilted position (P2) on said horizontal plane (9), or when said station (1) is turned upside down with respect to said vertical operating position (P1), said predetermined quantity of ink (17) flows back from said collection chamber (18) to said back-flow compartment (45), whereby said refilling means (24, 26) emerge from said ink (17) and any leakage of ink through said refilling means is avoided.

2. Station according to claim 1, characterized in that said back-flow compartment (45) has a volume at least equal to the volume of said predetermined quantity of ink (17).

3. Station according to claim 1 or 2, characterized in that said refilling means (24, 26) are disposed in a central position with respect to said bottom wall (6) and symmetrical with respect to the side walls (8a, 8b, 8c, 8d) of said container (4).

4. Station according to any one of the previous claims, characterized in that said refilling means comprise an elongated capillary element (26), passing through a bottom wall (11) of said housing (10) and having a lower end (28) facing said bottom wall (6) and an upper end (27) suitable for being inserted in said cartridge (2) for transferring said ink (17) through capillarity from said container (4) to said cartridge (2).

5. Station according to claim 4, characterized in that said capillary element (26) is inserted in an impermeable, tube-like element (24), attached to said housing (10), and extending in said collection chamber (18), perpendicularly to said bottom wall (6), said tube-like element (24) also being disposed in a position that is central with

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respect to said bottom wall (6) and symmetrical with respect to the side walls (8a, 8b, 8c, 8d) of said container (4), so that said capillary element (26) is not covered by said ink (17) when said container (4) is tilted laterally, or turned upside down.

6. Station according to claim 5, characterized in that said tube-like element (24) 5 consists of a rigid pipe, attached to said bottom wall (11) of said housing (10).

7. Station according to claim 5, characterized in that said tube-like element (24) consists of a rigid and impermeable sheath, attached tight to said bottom wall (11).

8. Station as in any of the claims from 4 to 7, characterized in that said lower end (28) of said capillary element (26) is placed at a distance of not more than about 10 5 cm from said bottom wall (6).

9. Station according to any one of the previous claims, characterized in that said container (4) comprises a compensating device (34) for balancing differences in hydrostatic pressure between said collection chamber (18) and said cartridge (2); said compensating device comprising a lamina valve (36), attached against a boss 15 (32) of the bottom wall (11) of said housing (10), said lamina (36) comprising a flexible portion (38), suitable for elastically assuming one or the other of two positions, at opposite ends with respect to a rest position, when said lamina (36) is urged by the difference in hydrostatic pressure between the cartridge (2) and the collection chamber (18), or vice versa.

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